
QUALITY MANAGEMENT AND ACCEPTANCE STRUCTURAL CONCRETE

GENERAL

This Instructional Memorandum is based on the concept of mutual benefit partnership between the Contracting Authority and the Contractor during progress of the work.

The Contractor shall perform process control sampling, testing, and inspection during all phases of the concrete work at the rate specified in the contract documents, with monitor inspection by the agency personnel. Inspection of all other aspects of the concrete paving operation remains the responsibility of the Engineer.

An Iowa DOT PCC Level I Concrete Field Testing Technician or Technician Grade I (in accordance with ACI CP-2) may perform the sampling and testing duties for which he or she is certified.

FIELD CONTROL

The Engineer will perform acceptance and assurance testing at the following minimum test frequencies:

TEST FREQUENCIES

	Assurance	
Air Content of Plastic Concrete	1/80 m3 (1/100 yd3) or min. 1 per pour	IM 318
Water/Cementitious Ratio (Related to Maximum Water)	Batch Ticket Review	IM 528
Slump of Plastic Concrete	1/80 m3 (1/100 yd3) or min. 1 per pour	IM 318
Flexural Strength Beams*	Observe casting during assurance testing	IM 316

* The Engineer shall be responsible for determining that sufficient strength has been achieved for loading when the maturity method is used.

QUALITY CONTROL

The Contractor shall identify the personnel responsible for the contractor Quality Control testing, as well as the company official who will act as liaison with the Contracting Authority. The certified technician shall also have direct communication with the concrete supplier so changes may be made to the concrete mixture to maintain concrete within the specified limits of the contract documents.

Personnel Requirements

1. Perform and utilize process control tests and other Quality Control practices to ensure that delivered materials and proportioning meets the requirements of the mix design(s).
2. The Contractor shall furnish name(s) and credentials of the Quality Control staff to the Engineer prior to the beginning of construction.

DOCUMENTATION

The Contractor shall maintain records of all inspections and tests. The records shall indicate the nature and number of observations made, the number and type of deficiencies found, the quantities represented by the test, and any corrective action taken. The Contractor documentation procedures will be subject to the approval of the Contracting Authority prior to the start of the work and prior to regular monitoring during the progress of the work. Use standard Iowa DOT forms. Batch tickets and gradation data shall be documented in accordance with Iowa DOT requirements. Copies shall be submitted to the Engineer as work progresses.

A tabulation of individual test results shall be prepared for the following tests. These shall be available to the Engineer at any time and submitted to the Engineer daily:

1. Plastic air and slump tests – Form #M115 (E115)
2. Completed batch tickets
3. Specific documentation of incorporation of non-compliant materials

Tabulating of test data will be completed within 24 hours after testing.

The Contractor shall notify the Engineer whenever the process approaches a specification limit and shall take action, which results in the test results moving toward the specification target, away from the limit.

All records documenting the Contractor Quality Control inspections and tests shall become property of the Contracting Authority upon completion of the work.

CORRECTIVE ACTION

The Contractor shall take prompt action to correct conditions that have resulted, or could result, in the incorporation of non-compliant materials.

NON-COMPLIANT MATERIALS

The Contractor shall establish and maintain an effective and positive system for controlling non-compliant material, including procedures for its identification, isolation and disposition. Reclaiming or reworking of non-compliant materials shall be in accordance with procedures acceptable to the Contracting Authority.

All non-compliant materials and products shall be positively identified to prevent use, shipment, and intermingling with conforming materials and products.

AVOIDANCE OF DISPUTES

Every effort should be made by Contractor and Engineer personnel to avoid any potential conflicts in the Quality Assurance Program prior to and during the project by using partnering concepts. Potential conflicts should be resolved at the lowest possible levels between the Contractor and Engineer personnel. Correction of problems and performance of the final product should be the primary objective of this resolution process.

TESTING

The Contractor and Engineer shall perform testing on the first load to establish correlation. When the first load, or other loads during production, does not meet the specification limits, the Contractor shall sample and test each load thereafter until compliance is established. Testing may continue at the rate established in IM 204 after complying load has been produced.

If less than 45 m³ (60 cu. yd.) are produced for an individual placement of concrete batched in a continuous operation for a project, the Engineer shall perform the Quality Control sampling and testing.